

CMS DAQ Project at Fermilab



Fermi National Accelerator Laboratory

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CD/CEPA/OAA

CD Status Report, 2004/03/24

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People

- V. O'Dell (FNAL/PPD): Project manager
- I. Suzuki (FNAL/CD): Software R&D
 - HCAL run control
 - EMU software support
 - Slice test software
 - EVM
- D. Charak (FNAL/CD): Software R&D
 - HCAL run control
 - Test bench sysadmin
- S. Esen, T. Yetkin (FNAL/PPD)
- K. Sumorok, S. Pavlon (MIT)

Plan as of Apr. '03

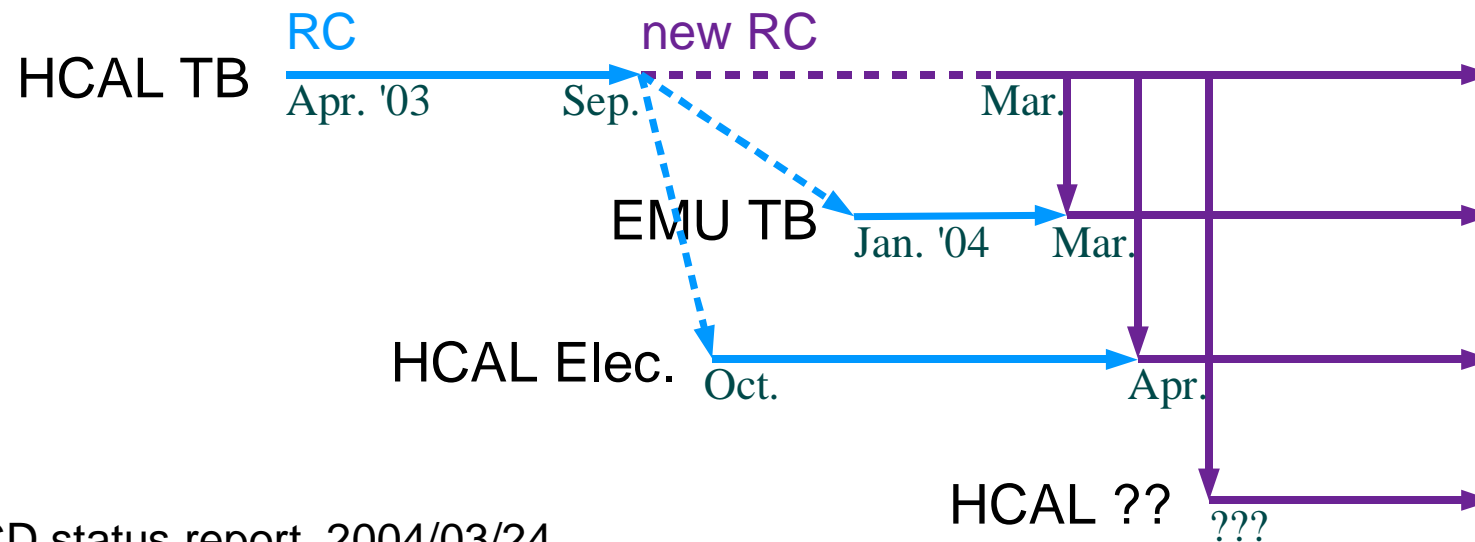
- HCAL + EMU beam test support: '03 Q2 : 100+ α %
- Development of the slice test DAQ: '03 : 10 %
- Slice test DAQ integration: '04
- US-CMS slice test at CERN: '04 Q4
- EVB benchmarks and improvements: '03 Q2-3 : 10 %
- EVM study for better traffic control: '03 - '04 : 0 %
- CMS DAQ commissioning: '05 -
- CMS data taking: '07

HCAL and EMU Beam Test '03

- Provided a run control. (HCAL)
- Provided an event builder software modified from a snap-shot of CMS event builder. (EMU)
- Provided framework to implement front-end readout software. (EMU)
- EMU electronics crate was put into the EVM test bench for the system development. (EMU)
- Helped transfer data to Fermilab. (EMU)
- Provided XDAQ control library

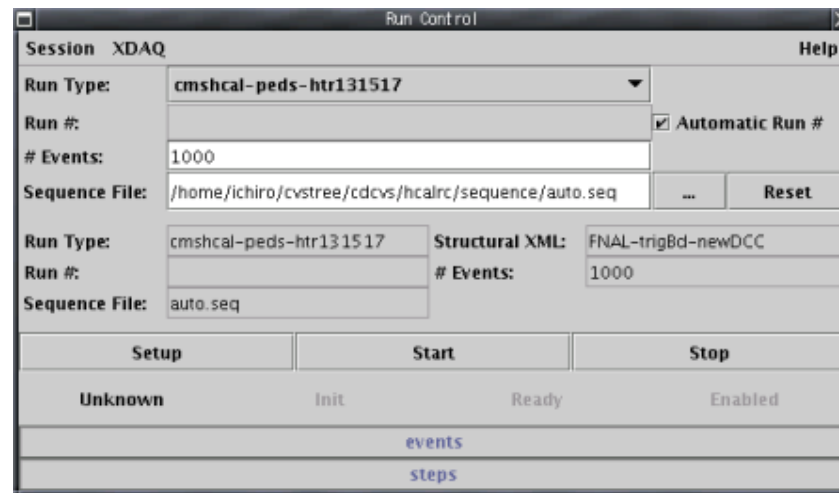
Expanded Usage of Run Control

- The run control was meant to be a single-use software.
- It is used in various places now.
 - HCAL test beam, HCAL elec. test bench @Fermi, EMU test beam
- Better software for wider use → new run control software



The New Run Control

- Post-mortem review in Sep. 03
 - Problems in development and operation were identified.
 - Decided to develop the new run control for stability and flexibility
- Initial version was released.
 - HCAL: integration
- middle of Mar. '04
 - EMU: integration
- end of Mar. '04



RCMS Support for Slice Test

- Run Control and Monitoring System: CMS 'back-end' software for the final system
- Requires consistent setup with Tomcat and MySQL.
- The first version was released in Oct. '03.
- Test installation on EVM test bench. The detailed instructions were distributed to US CMS DAQ people.

Assets for CD - Experience

- We learned;
 - more about CVS
 - Java (Swing, XML, JUnit, ...)
 - Tomcat + MySQL
 - eXtreme Programming!!
- We collaborated with;
 - CMS HCAL
 - CMS EMU
 - CMS DAQ @CERN

Plan

- HCAL + EMU beam test support: '04 Q1-3
- Development of the slice test DAQ: '04
- Slice test DAQ integration: '04 Q3-4
- US-CMS slice test at CERN: '04 Q4 - '05 Q1
- EVB benchmarks and improvements: '04
- EVM study for better traffic control: '04
- CMS DAQ pre-series commissioning: '04 - '05
- CMS data taking: '07

HCAL and EMU Beam Test '04

- Maintain XDAQ control library up-to-date
- Provide run control (HCAL)
- Provide run control modification/support (EMU)
- Help migration to XDAQ V2.x (EMU)
- (Help migration to a new EVB (EMU) ?)

US-CMS Slice Test

- RCMS

- ◆ Setup RCMS for dummy XDAQ applications for HCAL run control test
- ◆ Setup RCMS for the EVB

- EVB

- ◆ Install the latest code (EMU current code is one year old)
- ◆ Modify front-end interface code for the new EVB
- ◆ Modify EMU and HCAL test beam code

Summary

- Collaboration with EMU and HCAL groups was successful.
- HCAL run control for the beam test was used in wider situation than expected.
- XDAQ control library and XDAQ technical support were, and will be provided.
- EVB (EVM) software needs more effort.
- Big goal of '04: US-CMS slice test